

1 16. The method of claim 1, further comprising implanting a
2 stimulation apparatus having an integrated pulse system directly coupled to the first
3 electrode so that the stimulation apparatus is adjacent to and/or within the skull of the
4 patient, and wherein positioning the first electrode comprises placing the first electrode
5 at least proximate to the pia mater.

1 17. The method of claim 1, further comprising implanting a
2 stimulation apparatus having an integrated pulse system directly coupled to the first
3 electrode so that the stimulation apparatus is adjacent to and/or within the skull of the
4 patient, and wherein positioning the first electrode comprises inserting the first
5 electrode into the cortex of the brain.

1 18. The method of claim 1 wherein applying an electrical potential
2 comprises placing a voltage of ± 1 mV to ± 10 V between the first electrode and a
3 second electrode.

1 19. The method of claim 1 wherein applying an electrical potential
2 comprises generating electrical pulses at 2 to 1000 Hz.

1 20. The method of claim 1, further comprising ascertaining a
2 threshold for generating action potentials for cells at the stimulation site, and wherein
3 applying an electrical potential comprises placing a subthreshold voltage less than the
4 threshold for generating action potentials .

1 21. The method of claim 1, further comprising ascertaining a
2 threshold for generating action potentials for cells at the stimulation site, and wherein
3 applying an electrical potential comprises placing a subthreshold voltage between the

4 first electrode and a second electrode approximately 10-40% less than the threshold for
5 generating action potential .

1 22. The method of claim 1, further comprising ascertaining a
2 threshold for generating electrophysiologic signals associated with the neural function,
3 and wherein applying an electrical potential comprises placing a subthreshold voltage
4 between the first electrode and a second electrode less than the threshold for
5 generating electrophysiologic signals.

1 23. The method of claim 1, further comprising ascertaining a
2 threshold for generating electrophysiologic signals for cells at the stimulation site, and
3 wherein applying an electrical potential comprises placing a subthreshold voltage
4 between the first electrode and a second electrode 20-50% less than the threshold for
5 generating electrophysiologic signals.

1 24. The method of claim 1, further comprising ascertaining a
2 threshold for eliciting the neural function, and wherein applying an electrical potential
3 comprises placing a subthreshold voltage between the first electrode and a second
4 electrode less than the threshold for eliciting the neural function.

1 25. The method of claim 1, further comprising ascertaining a
2 threshold for eliciting the neural function, and wherein applying an electrical potential
3 comprises placing a subthreshold voltage between the first electrode and a second
4 electrode 30-60% less than the threshold for eliciting the neural function.

1 26. The method of claim 1 wherein a motor function and/or a sensory
2 function of a body part controlled by the neural-function has been affected by brain
3 damage to the first region of the brain, and wherein the method further comprises

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4 performing physical therapy to the affected body part while or immediately after
5 applying the electrical potential between the first electrode and a second electrode.

1 27. The method of claim 1 wherein a motor function and/or a sensory
2 function of a body part controlled by the neural-function has been affected by brain
3 damage to the first region of the brain, and wherein the method further comprises
4 pharmaceutically stimulating the brain while applying the electrical potential between
5 the first electrode and a second electrode.

1 28. A method of effectuating a neural-function of a brain of a patient
2 associated with a first location in the brain, comprising:
3 identifying a stimulation site in and/or on the brain where neural activity
4 has changed in response to a change in the neural-function in the first location of the
5 brain;
6 positioning a first electrode at the stimulation site;
7 positioning a second electrode at the stimulation site; and
8 applying an electrical potential between the first and second electrodes.

1 29. The method of claim 28 wherein identifying a stimulation site
2 comprises imaging the cortex of the brain.

1 30. The method of claim 28 wherein identifying a stimulation site
2 comprises:
3 taking a first image of the brain that shows neural activity related to the
4 neural-function using functional MRI;
5 taking a second image of the brain that shows neural activity related to
6 the neural-function using functional MRI after taking the first image of the brain; and
7 comparing a change in the neural activity related to the neural-function.